**Course:** PSYC 351, Psychology of Perception (CRN 21561, Group II)
**Term:** Spring 2017
**Room:** Sewall Hall 303
**Class:** Tues-Thurs 2:30-3:45pm

# PSYCHOLOGY OF PERCEPTION SYLLABUS

## INSTRUCTOR CONTACT INFORMATION

**Instructor:** James R. Pomerantz
**Office:** Sewall Hall 492A (4th floor, street side of Sewall Hall, corner office facing Baker College)
**Email:** pomeran@rice.edu
**Office Hours:** Wednesdays 2:00 – 3:00 pm or by appointment
**Teaching Assistant**: Mingjun Zhai (mingjun.zhai@rice.edu)
Office hours: Tuesday 4:00-5:00pm at Sewall 150.

## COURSE OBJECTIVES AND LEARNING OUTCOMES

- Learn how the understanding of perception is pursued by philosophers, psychologists, neuroscientists, physicians, cognitive scientists, and computer engineers.
- Master the methods that are used to determine how sensation and perception function, including clinical, neural, and behavioral methods.
- Study how the visual system works, both anatomically and functionally, starting with the eye and proceeding on through brain pathways.
- Understand how we are able to see motion, depth, color, objects, and scenes.
- Learn how the auditory system works, both anatomically and functionally, and how we are able to perceive speech and music.
- Students will demonstrate their mastery of these concepts by completing the scheduled course exams and by writing a course paper (or completing a course project).

## REQUIRED TEXTS AND MATERIALS

E. Bruce Goldstein***, Sensation and Perception, 9th edition*** (2014). Wadsworth / Cengage Learning. ISBN-13: 978-1-133-95849-9; or ISBN-10: 1-133-95849-4. Hardcover. The publisher indicates that all hardcover copies of this 9th edition are shipped with an access card that gives you personal access to their online Coursemate resources, including access to the ebook, study guides, glossaries, flash cards, practice tests, and the like. If you find such resources helpful, please use them, but they are not required for the course. The access cards are good for 6 months. This means that any annotations or highlighting you do in the ebook will be lost if you don't print those out. It also means that if you buy a used copy of the book, the access card will probably not be with the book, or if it is, it may have expired. The publisher indicates you can purchase the access card as a standalone item directly from them; because it includes the ebook, this may be an option for you if you have a used book or don't care to own a physical book. Copies of the book for sale on Amazon often do not include the access card even when the title suggests otherwise.

***Visual Perception: Essential Readings***, Steven Yantis, Editor. Psychology Press, 2001. ISBN-10: 0863775985, ISBN-13: 978-0863775987. (This textbook's subtitle also sometimes appears as *Key Readings in Cognition*.)

Earlier editions of the Goldstein book are available used at a lower price, but it is a risky strategy to buy them rather than the current editions. You'll sometimes be ok, but publishers update their books every three years or so by weeding out the dated or incorrect material and introducing new and often important material. Also, when we review the texts in class from time to time, we often refer to page numbers, and they often differ between two editions. If you're trying to save money, and most of us are, it makes sense to buy a used copy or rent a copy of the current edition, and/or sell it back at the end of the semester if you're not going on in the field. Those are wiser ways to economize.

## EXAMS AND PAPERS

There will be three examinations, plus a short paper (or, with permission, a project). The in-class exams will include a mixture of essay and objective questions and is tentatively scheduled for the dates indicated on the provisional schedule. The final examination will follow a similar format and probably will be self-scheduled. The final will be cumulative but will emphasize material from the final one-third of the semester. The exams will include material from the lectures and lecture slides as well as from the readings. Many questions will come from both sources, but there will be questions just from the lectures as well as questions just from the readings. The short paper should cover a topic from a list to be made available a few weeks following the start of class, or on another topic approved by us in advance. The paper should be 5 - 6 double-spaced pages of normal (10-12) font size text, not counting references and figures, and it will be due electronically by the **date indicated on the tentative schedule in this syllabus**. Students wishing instead to do a project should consult with either of us about a topic. The project could involve designing, conducting, and analyzing data from a perceptual experiment; or preparing and delivering an in-class demonstration of a perceptual effect, including presenting background material and an explanation of the phenomenon. It too should be completed by that same date.

## GRADE POLICIES

Course grades will be determined using these weights:

| | |
|---|---|
| First exam - | 25% |
| Second exam - | 25% |
| Final exam (cumulative) - | 25% |
| Paper/ project - | 25% |

In addition, class participation may be factored in at the end of the year as a tie-breaker, for students whose grades fall right at the border between grade categories or whose participation has been exceptional. There is no extra credit possible in this course. The reason for no extra credit is simply that such credit must be extended to all students if extended to any, and if it is extended to all, it becomes in effect just another course requirement.

## ABSENCE POLICIES

Attendance is not taken in this course. That said, exams will include material presented only in the lectures, not in the texts (and vice versa), and not necessarily covered in the lecture slides provided. So attendance is highly recommended.

## RICE HONOR CODE

In this course, all students will be held to the standards of the Rice Honor Code, a code that you pledged to honor when you matriculated at this institution. If you are unfamiliar with the details of this code and how it is administered, you should consult the Honor System Handbook at http://honor.rice.edu/honor-system-handbook/. This handbook outlines the University's expectations for the integrity of your academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process.

## DISABILITY SUPPORT SERVICES

If you have a documented disability or other condition that may affect academic performance, you should: 1) make sure this documentation is on file with Disability Support Services (Allen Center, Room 111 / adarice@rice.edu / x5841) to determine the accommodations you need; and 2) talk with me to discuss your accommodation needs.

## SYLLABUS CHANGE POLICY

This syllabus is only a guide for the course and is subject to change with advanced notice. However, every effort will be made to keep requirements and dates unchanged.

## CONTENT OF COURSE

It's time to come to our senses! This course will introduce sensory and perceptual systems, both in humans and in other animals who hold most of the patents on the systems humans enjoy. Following an overview outlining basic facts about perception, we will tackle the profound philosophical issues underlying the study of perception and mind. We then survey of the experimental methods by which sensations and perceptions can be measured (psychophysics), including procedures for determining thresholds; the logic and computational procedures for signal detection theory; psychophysical scaling; and information theory as applied to psychology. Next we turn to the senses themselves, beginning with the study of the anatomy and physiology of the human visual system, spanning the range from the eye through the optical nerve and visual pathways to cortical sites deep in the brain. We will examine the processing performed on sensory signals before the signals are sent onward, and then focus on the analysis performed in the visual areas of the brain itself. Next we turn to the various dimensions of visual stimuli that we perceive, including color; depth and space; motion; visual form and patterns, including perceptual organization and Gestalt psychology. Following vision, we pursue an analogous path with hearing and auditory perception. Time permitting, we will consider the remaining senses, including smell, taste, touch, and the vestibular system. We will also aim to examine information-processing approaches to perception, including top-down and bottom-up processes, the role of knowledge and attention in perception, imagery, and stage models of information flow. And periodically we will discuss perceptual development, including what is known about how infants perceive the world. Throughout the course there will be demonstrations of a variety of sensory and perceptual effects, including illusions that shed light on normal visual functions. So bring your eyeglasses to class!

The course will follow a lecture format, but with questions welcomed and encouraged. For most weeks, the lecture slides will be placed on our class Canvas just before class. Although this may free you from having to copy down material, the slides are not always self-explanatory. If the class is small enough, we will include discussion whenever appropriate. In preparation for that discussion, students should complete each week's reading assignment before the class meeting. An approximate timetable of topics and reading assignments is listed later this syllabus. The lectures will present material not appearing in either textbook – the overlap between texts and lectures is around 50% - so attendance in class is strongly advised. The order in which the textbook considers topics is not in perfect agreement with the order for the lectures, but this shouldn't pose a problem.

## COURSE SCHEDULE (AS OF MID DECEMBER – SUBJECT TO CHANGE)

| **Week 1** | | **Readings:** Goldstein, Yantis |
|---|---|---|
| 01/10/2017 | Introduction, orienting questions | Special reading on Canvas |
| 01/12/2017 | Overview of course | G: 1 |
| **Week 2** | | |
| 01/17/2017 | Epistemology | G: 2; Y: 5 |
| 01/19/2017 | Philosophy of perception | |
| **Week 3** | | |
| 01/24/2017 | Basic facts about perception | G: 3, Appendix; Y: 2 |
| 01/26/2017 | Psychophysics and measurement | |
| **Week 4** | | |
| 01/31/2017 | Psychophysics (continued) | G: 4; Y: 3 |
| 02/02/2017 | Early vision: the eye | |
| **Week 5** | | |
| 02/07/2019 | Early vision: coding | G: 5; Y: 7 |
| 02/09/2017 | 2016 RICE SPRING RECESS | |
| **Week 6** | | |
| 02/14/2017 | Brightness perception, review | G: 6,7 |
| 02/16/2017 | **Exam 1** | |
| **Week 7** | | |
| 02/21/2017 | Exam feedback; Color perception | G: 9; Y: 11, 17 |
| 02/23/2017 | Color (continued) | |
| **Week 8** | | |
| 02/28/2017 | Color | |
| 03/02/2017 | Perceptual organization | |
| **Week 9** | | |
| 03/07/2017 | Shape and form perception | G: 8; Y: 20 |
| 03/09/2017 | Shape and form perception (continued) | |

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|---|---|---|
| **Week 10** | | |
| 03/14/2017 | Spring Break: No Class | G: 10; Y:13 |
| 03/16/2017 | Spring Break: No Class | |
| **Week 11** | | |
| 03/21/2017 | Motion perception | G: 11 |
| 03/23/2017 | Depth perception | |
| **Week 12** | | |
| 03/28/2017 | Audition: nature of sound, comparison with vision | G: 12; Y: 19 |
| 03/30/2017 | Early auditory system; review | |
| **Week 13** | | |
| 04/04/2017 | **Exam 2** | G: 13; Y: 21 |
| 04/06/2017 | Complex audition; exam feedback. **Papers due by email or Canvas on Apr 6, before midnight** | |
| **Week 14** | | |
| 04/11/2017 | Music, speech perception | |
| 04/13/2017 | Perceptual development | |
| **Week 15** | | |
| 04/18/2017 | The other senses | G: 14, 15 |
| 04/20/2017 | Conclusion; review | |

THE **THIRD/FINAL EXAM** WILL BE OFFERED ON CANVAS ON MAY 1, 2017. IT CAN BE TAKEN FROM ANYWHERE IN THE WORLD WITH AN INTERNET CONNECTION MOST OF THE TIME THAT DAY. YOU WILL HAVE 3 HOURS TO COMPLETE THE FINAL FROM WHEN YOU START IT.